



The Rocket Report

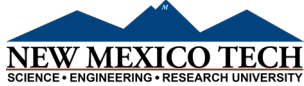
Summer STARBASE Camp 2020

In This Issue...

The Rocket Report	1
STEM Bytes	2
Masthead and Important Terms and Acronyms	2



In partnership with:



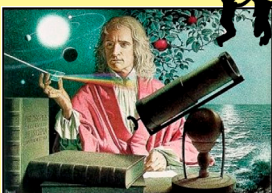
Collaborator:



ZOOMing into



MORE Summer STEM Camps!



Physics! Fluids! Flight! Chemistry! Engineering! Technology! Led by Spike and Pebbles, It was all there in the STARBASE virtual Summer STEM Camp, 22-26 June 2020.

From home, rising 5th-6th grade students, with call signs like Ironman and Dreamer, zoomed in to receive instructions on the various activities in their STEM kits each day.

Day 1: Physics

Students started off with a bang, and plops and fizzes. They shook virtual hands with Sir Issac Newton by launching Alka-Seltzer rockets. They used water, light, and optics to make pennies appear to disappear faster than taxes can.

Day 2: Fluids and Flight

Students defied gravity all day! With help from tricks like Bernoulli and his Principle,



students made ping pong balls float above a straw (take notes, David Copperfield!), water float upside down in an open jar, and little stunt planes fly through the air.

Fresh from his own Tuskegee Airmen, Inc. Virtual Aerospace Camp, Lt Col (ret.) Alex Carothers was guest speaker. Thanks, Lt Col Alex!

Day 3: Chemistry

Students studied physical and chemical changes, and built

molecules out of fruit snacks, as nature intended. The 70's were special, so they made their very own Lava Lamps. Groooovy!

Day 4: Engineering

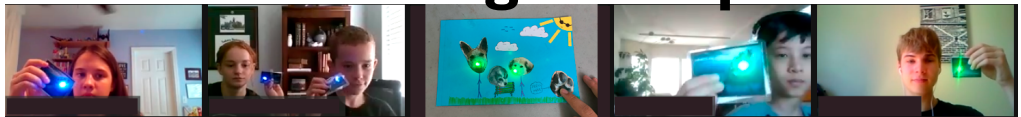
Students put on their engineering hats and built and redesigned some miniature load-bearing bridges. River Kwai not included.

Day 5: Technology

Students conducted themselves STEMerifically by creating a circuit with an energy tube, and building a Scooter-Bot out of a toothbrush. And give a hoot, they played a quiz game of Kahoot!



Summer Mid High Camp 2020



Programming! Python! Mu! Micro:bit! Scholars! Robots! Sensors! Led by Ms. Maryann Hospelhorn and Mr. Larry Heard, it was all there in the Mid High virtual Summer STEM Camp, 6-17 July 2020.

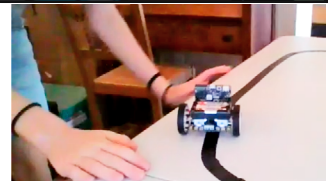
First, the 7th-12th grade students learned how to code in the Python computer language and the Mu code editor. They started out simply, learning how to input simple vari-

ables to print some customized text on the screen.

Campers also learned how to code **micro:bit**, the "pocket-sized computer transforming the world."

They even explored how to use *paper circuits* (yes, that's a thing) to make foldable cards with LEDs light up!

Every day, they'd debug a programming "Error of the Day."



Students added more STEM when they took on *math modules*. The *hypothesis* being, the *hypotenuse* of a triangle could be calculated with a little help from Pythagoras and Python!

Continued on page 2

AFRL NM STEM Academy
PO Box 9556
Albuquerque, NM 87119
(505) 846-8042
AFRL.RDMX.NMSTEMOutreach@us.af.mil
stem@afrlnewmexico.com

Website:
www.afrlnm.com/stem

No copyrighted material belonging to others is knowingly used in this publication without permission. If any is inadvertently used without permission, contact:

Mr. Steve Burke, Technical Writer.

Important Terms and Acronyms

- AF:** Air Force
- AFB:** Air Force Base
- AFRL:** Air Force Research Laboratory
- AFRL NM:** AFRL New Mexico (AFRL/RD and AFRL/RV), on KAFB
- AFRL/RD:** The Directed Energy Directorate of the AFRL
- AFRL/RV:** The Space Vehicles Directorate of the AFRL
- DoD:** Department of Defense
- KAFB:** Kirtland Air Force Base, Albuquerque, NM
- METS:** Mars Exoplanet Transient Satellite (METS) Mission 2019-2020
- MM:** Mission to Mars
- PRS:** Phillips Research Site
- S&Es:** Scientists and Engineers
- STEM:** Science, Technology, Engineering, and Math
- TECH:** Technology and Engineering Challenges
- USAF:** United States Air Force



32 former AFRL NM STEM Academy students were among registrants for STEM Signing Day on 4 May, 2020 (students sign "letters of intent" to their chosen STEM field and school)! See www.afrlnewmexico.com/stem-signing-day.

The Rocket Report (continued)

Summer Mid High Camp 2020 (continued)

Continued from page 1

Students picked up the micro:bit pace by playing with *accelerometers* and *radio communication*.

For more Python studies, they studied *for loops*, and got kind of graphic when they discovered *TinkerCad*.

The students followed that up later with *comparison* and *logical operators*, *nested loops*, *string methods*, and other programming techniques.

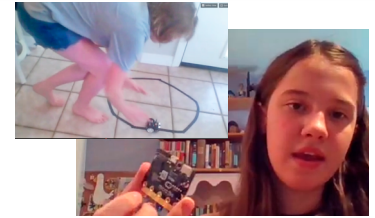
AFRL Scholars Isaac Ben-signor, John Burke, Laura Holifield, Sebastian Mettes, Nolan Rebernick, Maxwell Telmer, and Anonto Zaman joined in and discussed their work, background, coding experience, and programming and CAD soft-



ware they've used. Thanks for visiting, gang!

They really get rolling by building and programming a micro:bit-based wheeled *Maqueen robot*, and attaching *motion* and *line-following sensors* to it.

Students wrapped up the camp by sharing their progress, programs, and videos of their robots running around, with the group.



It was *fascinating* watching how quickly the students picked up the information. Older students helped younger students with questions faster than the teachers could!

By the end of camp, some students had even figured out how to write programs to make their math homework easier.



STEM Bytes

STEMYS, Meet Miss America

The Excellence in STEMYS Awards 2020, for contributions to STEM in NM, was held, virtually, on 30 June.

Emceed by KOB-TV4 meteorologist Eddie Garcia, it featured keynote speaker Miss America 2020 Camille Schrier, whose "special talent" is STEM! (Including making Elephant Toothpaste from the catalytic decomposition of hydrogen peroxide.)

Congratulations to *all* our winners, including Duane Dill, who posthumously won the Lifetime Achievement Award.

Go to www.afrlnewmexico.com/stemys for more information and a video of the event.



Lifetime Achievement Award

Duane Dill (posthumously)

Student K-8th	STEM Mentor
Jerome Rodriguez Acequia Madre Elementary	Steffi Weisburd UNM
Student 9-12th	School
Nathan Bryce- La Cueva High Makayla Gates- Valencia High	La Academia de Esperanza Albuquerque
Elementary Teacher	District
Iris Hernandez Susie Rayos Marmon Elementary	Las Cruces Public Schools
Middle School Teacher	Higher Education Program
Chausie Forster Garfield Middle School	Deep Dive Coding CNM, Albuquerque
High School Teacher	Non-Profit
Yolanda Flores Navajo Prep	Computer Science Alliance
STEM Advisor/Coach	Business Group
Laura Tenorio Taos	NAIOP NM
	Outstanding Community Advocate
	Melissa Ober

Virtual TAI Aviation

The Tuskegee Airmen, Inc. held a successful Virtual Aerospace Camp 8 June to 19 July 2020, for students ages 12-17.

It started off with a common curriculum, then split into an Aviation and a Space track. There were even Eggbert and Paper Airplane challenges. See www.tai-albuquerque.org.

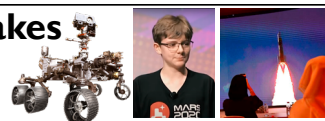


We Have What It Takes

If rovers are to [represent] the qualities of us as a race, we missed the most important thing: Perseverance.

--Alex Mather, Winner, 2020 "Name That Rover" Contest

To get through this pandemic, we need the same things we need to go to Mars: *Hope* and *Perseverance*. Well, this year, we've got 'em!



Private firm SpaceX historically launched two astronauts to the ISS on 30 May. UAE's *Hope* Mars rover lifted off 20 July. NASA's *Perseverance* rover, attached to its rocket, should launch around 30 July.

Coming Next Issue...

- It's a brave new world... and a brave new year of STEM!

A virtually unstoppable combination!
Watch for it!

